

FIG. 1

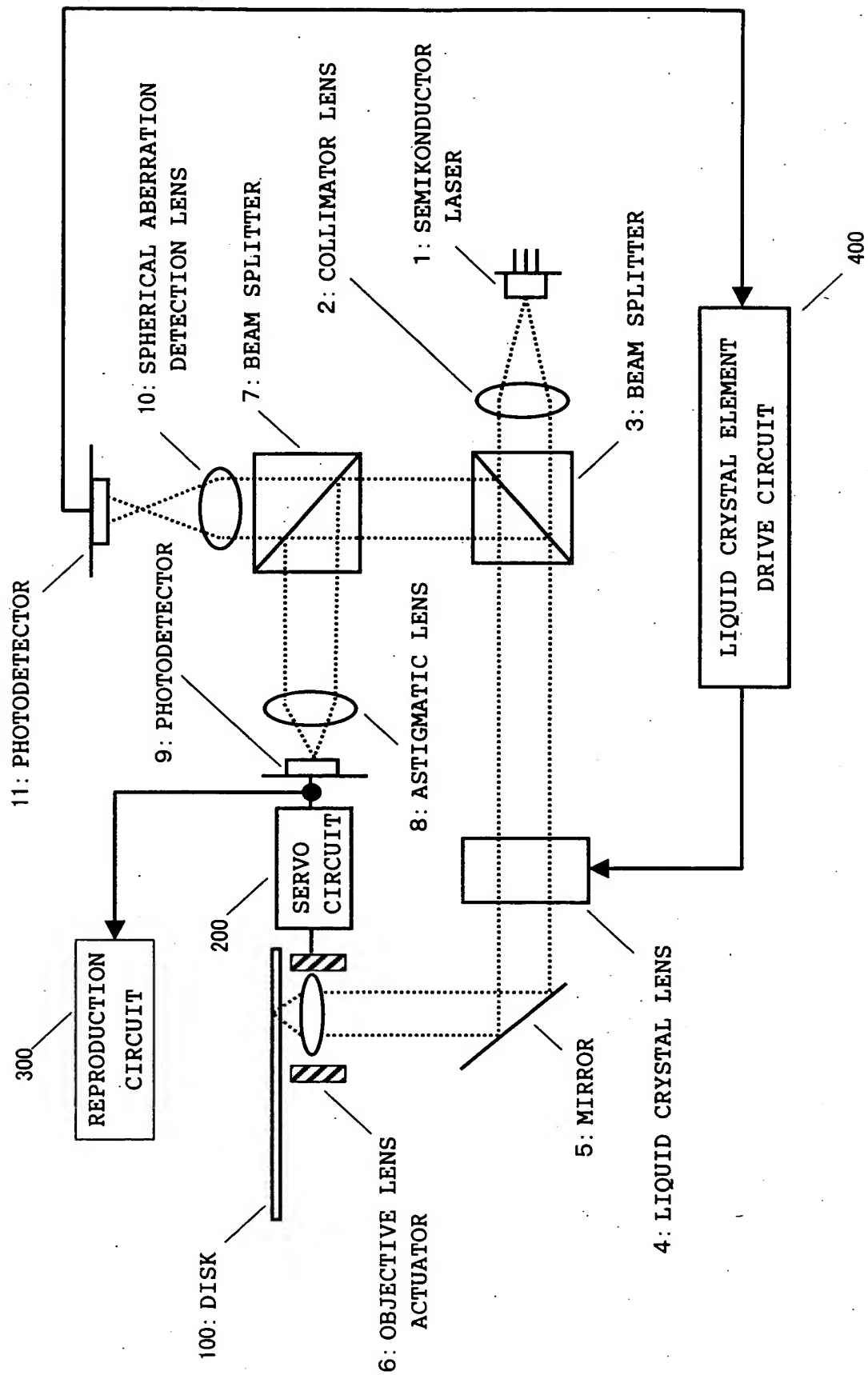


FIG. 2

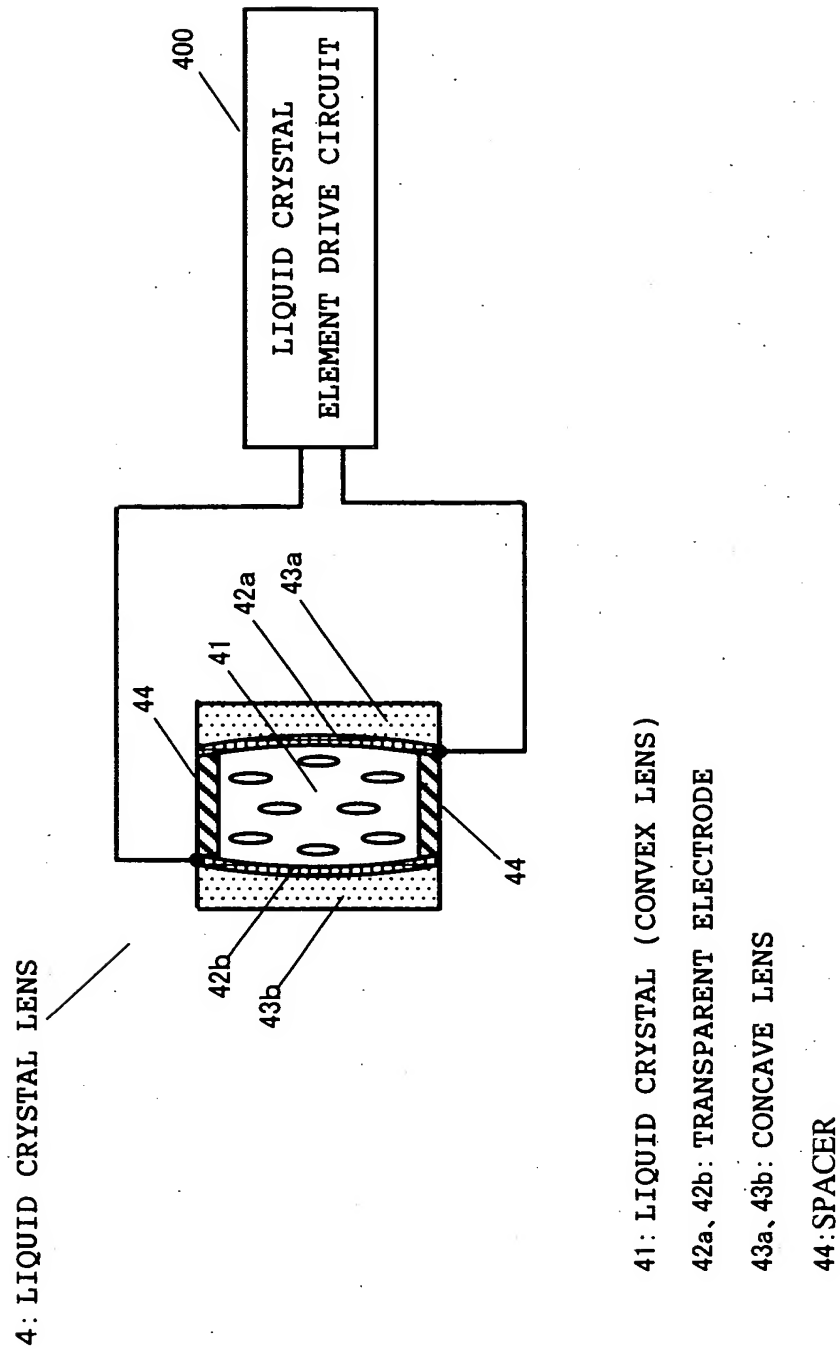
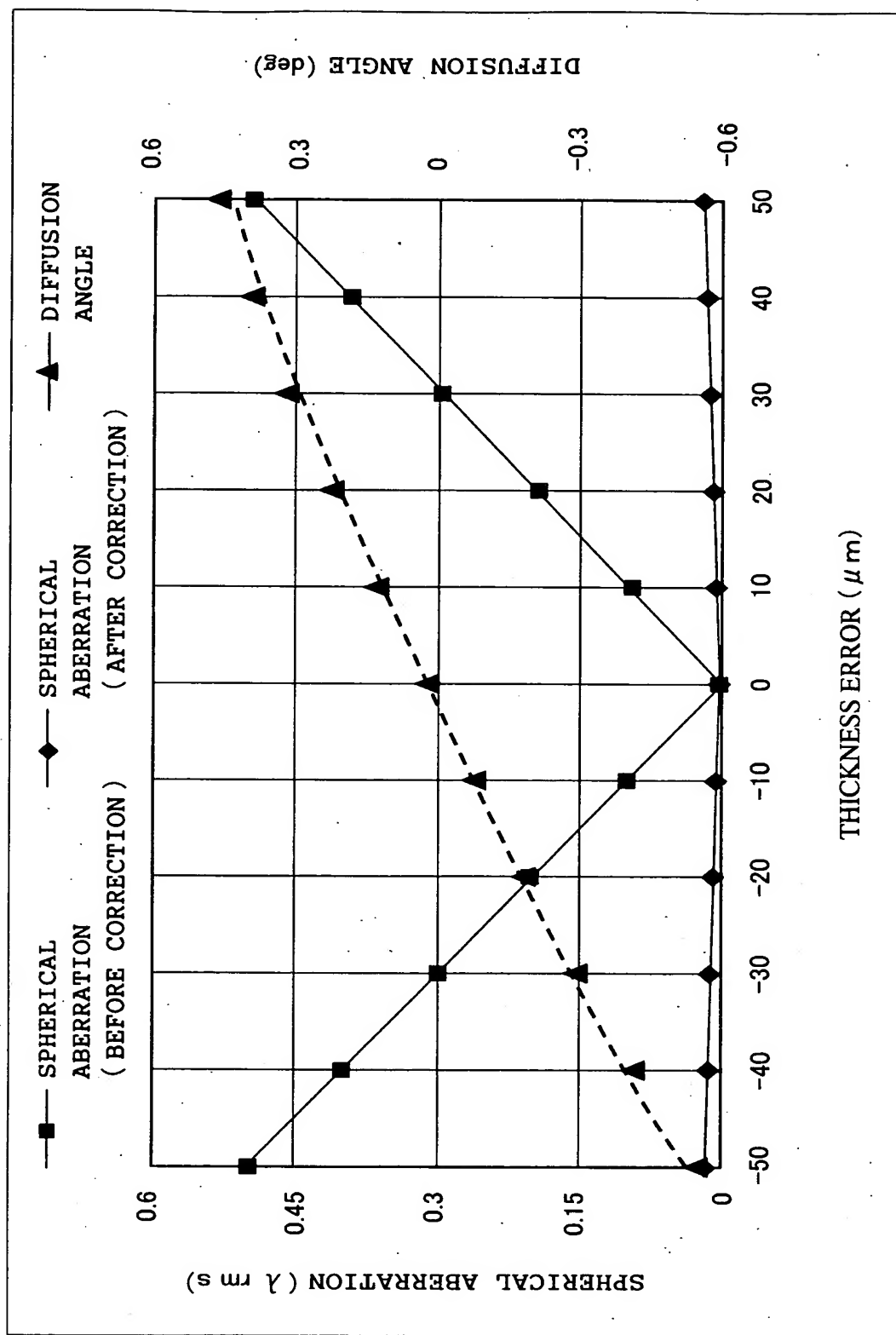


FIG.3



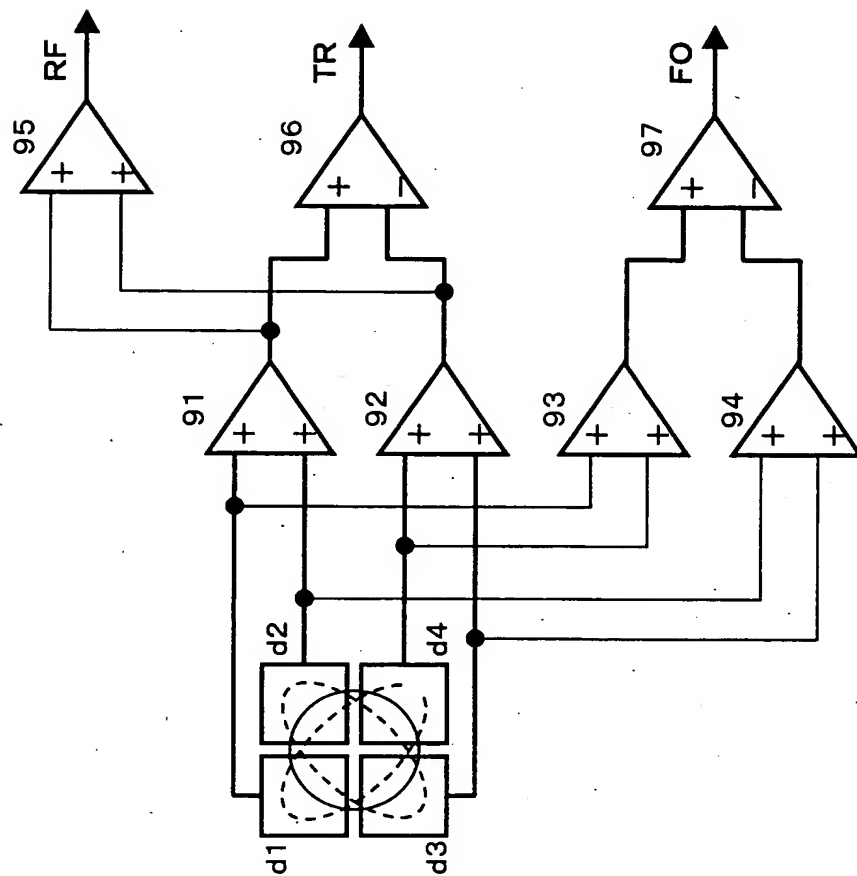


FIG. 4A

SYSTEM FOR GENERATING DETECTION SIGNAL TO BE
SUPPLIED TO SERVO CIRCUIT AND REPRODUCTION
CIRCUIT

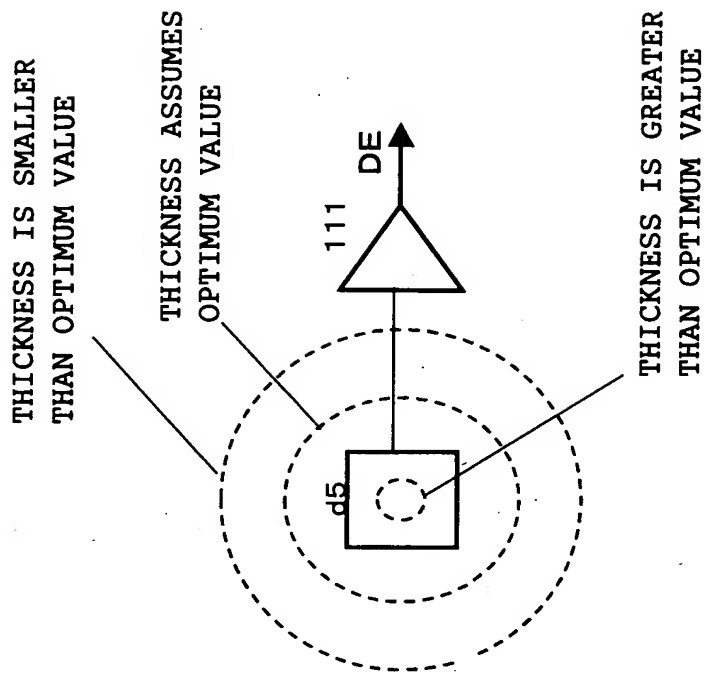


FIG. 4B

SYSTEM FOR GENERATING DETECTION SIGNAL
TO BE SUPPLIED TO LIQUID CRYSTAL
ELEMENT DRIVE CIRCUIT

LIGHT BEAM INCIDENT ON
SENSOR (A PLANE)

CROSS-SECTIONAL VIEW OF LIGHT
BEAM ON SENSOR (A PLANE)

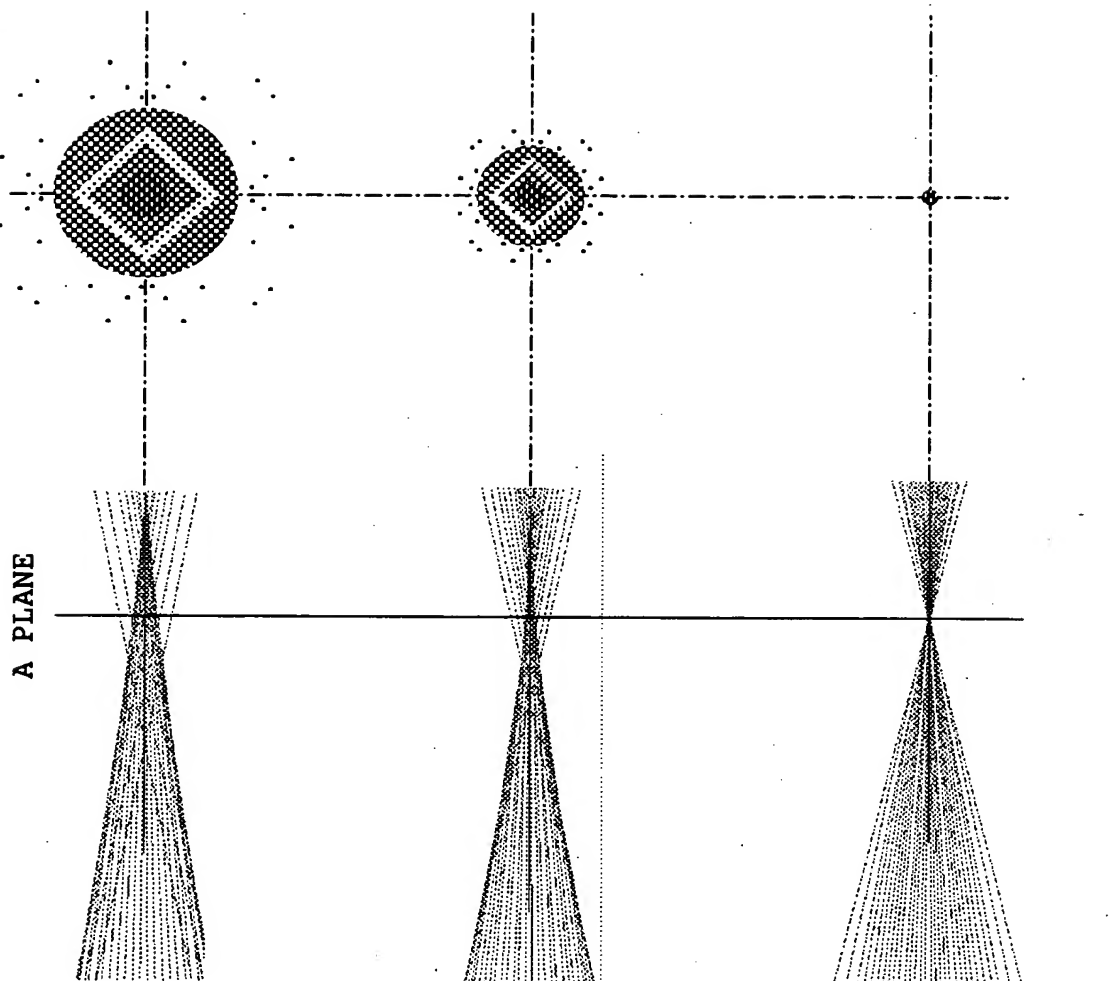


FIG. 5A
CASE WHERE
PROTECTIVE LAYER
IS THIN

FIG. 5B
CASE WHERE
PROTECTIVE LAYER IS
OPTIMUM IN THICKNESS

FIG. 5C
CASE WHERE
PROTECTIVE LAYER
IS THICK

FIG. 6 DISTRIBUTION OF LIGHT INTENSITY ON SENSOR (A PLANE)

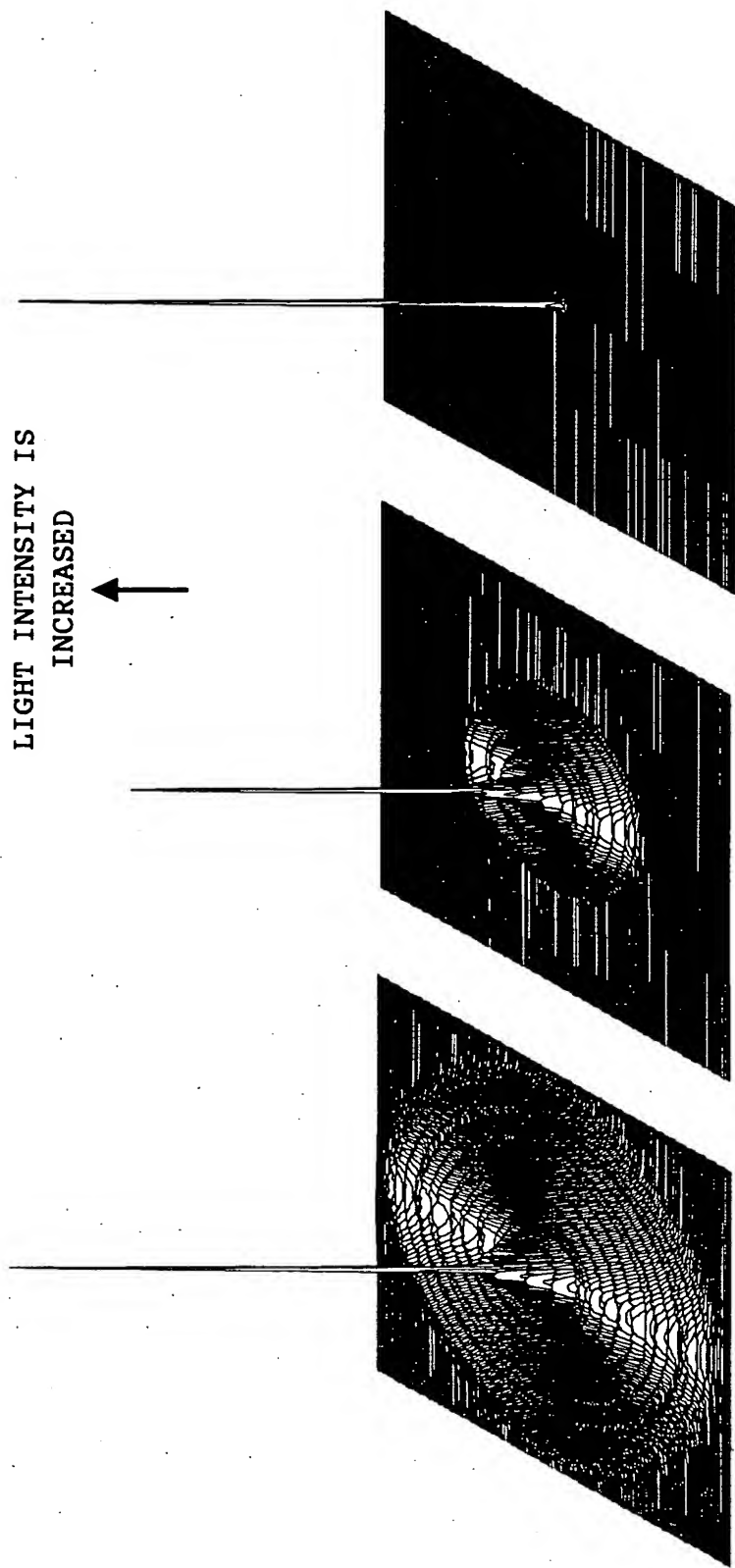


FIG. 6A

CASE WHERE
PROTECTIVE LAYER
IS THIN

FIG. 6B

CASE WHERE PROTECTIVE
LAYER IS OPTIMUM IN
THICKNESS

FIG. 6C

CASE WHERE
PROTECTIVE LAYER
IS THICK

FIG.7 CHANGES IN DETECTION SIGNAL IN ACCORDANCE WITH THICKNESS

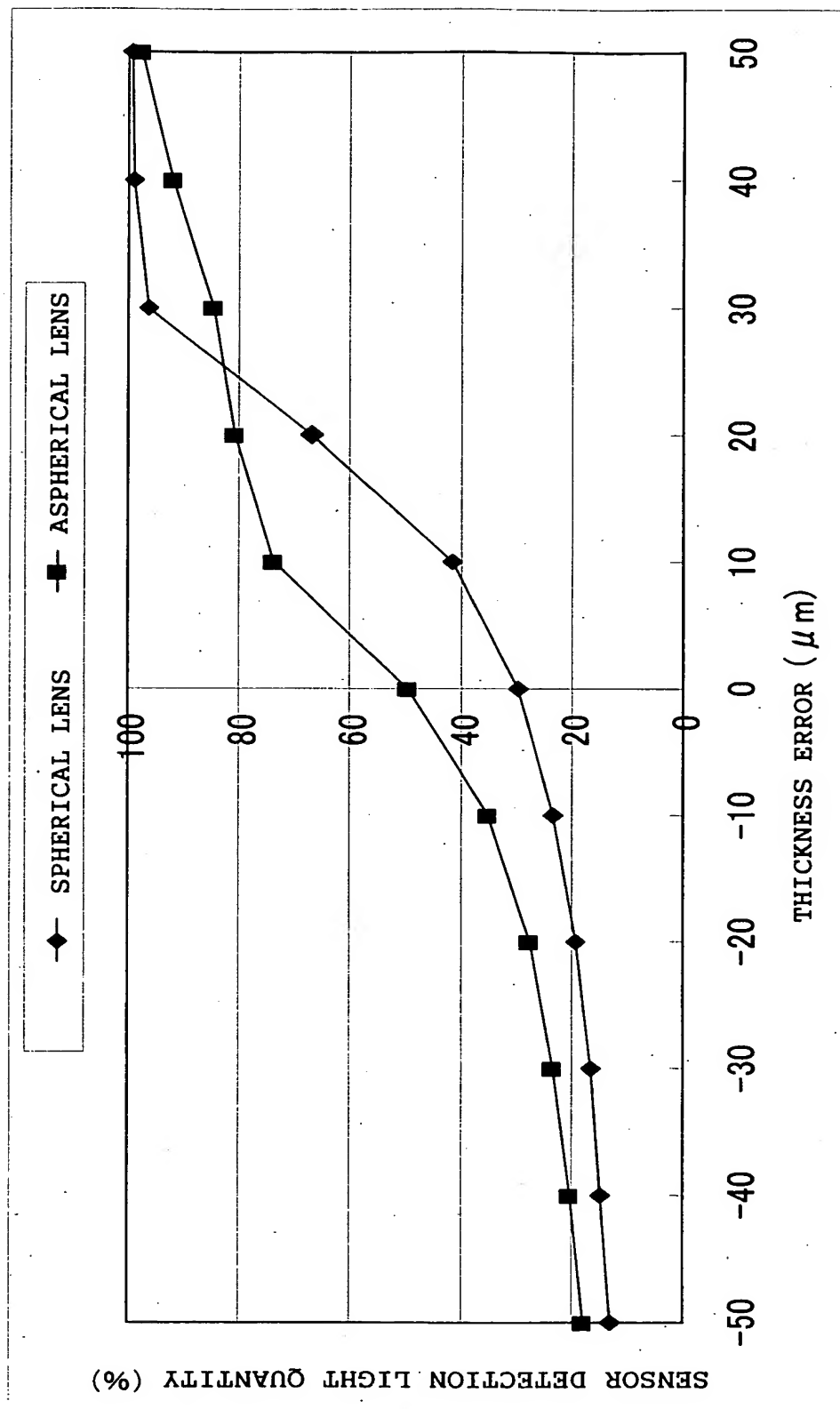


FIG.8 DISTRIBUTION OF DIFFUSION ANGLE OF RETURNING LIGHT (DUE TO THICKNESS ERROR)

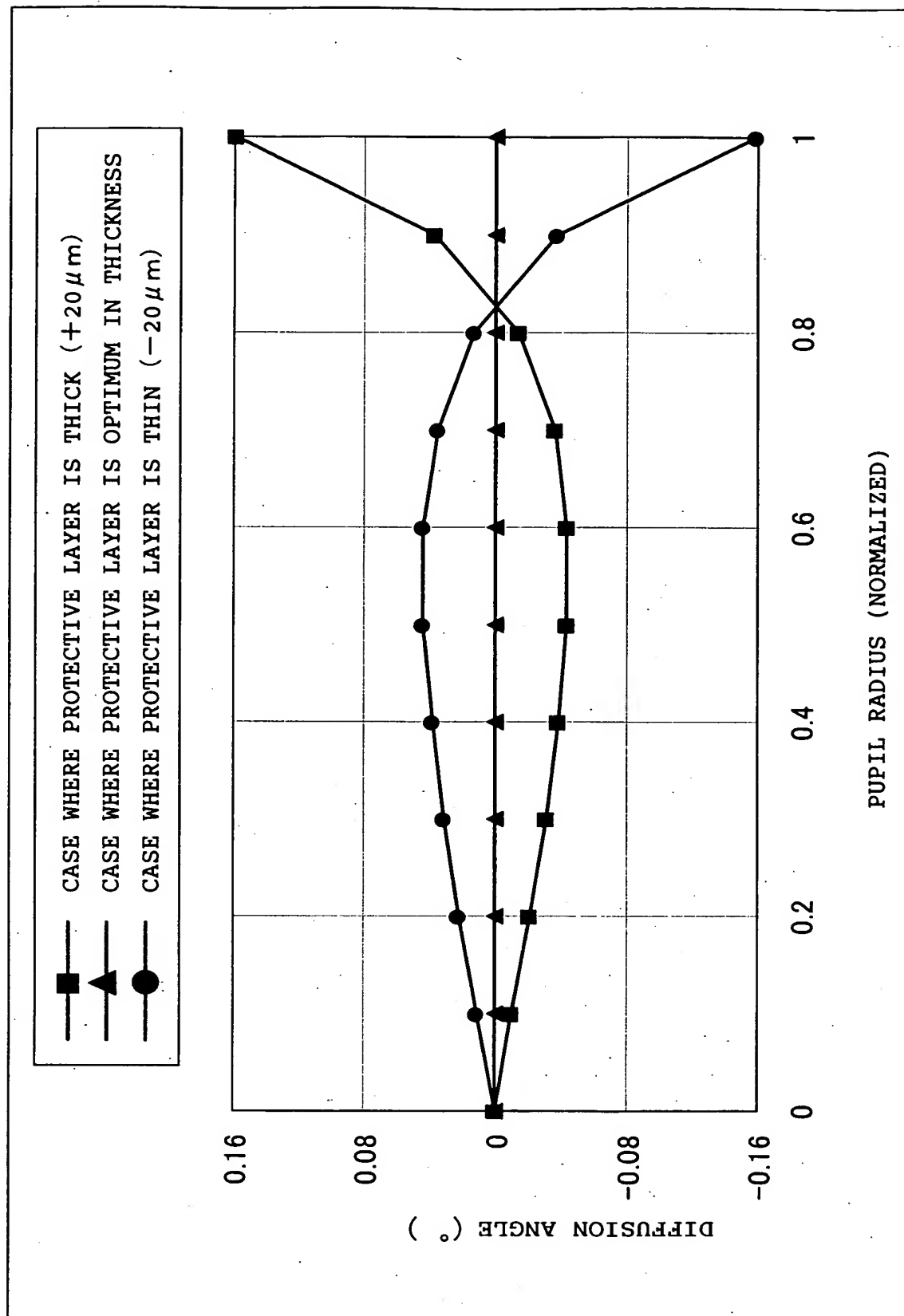


FIG. 9

CROSS-SECTIONAL VIEW OF LIGHT BEAM OF RETURNING LIGHT

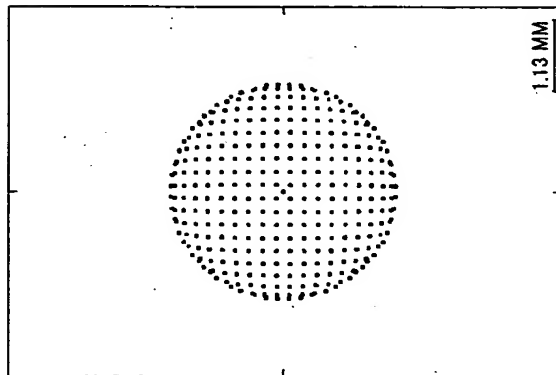


FIG. 9A

CASE WHERE
PROTECTIVE LAYER
IS THIN

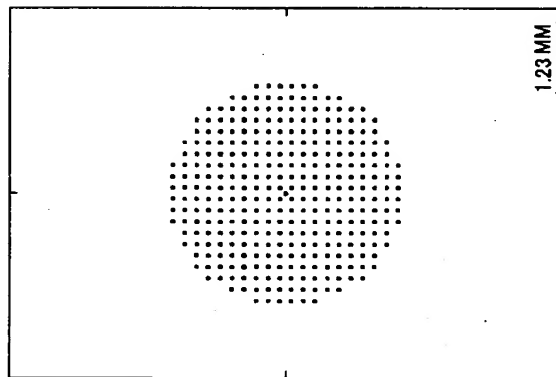


FIG. 9B

CASE WHERE PROTECTIVE
LAYER IS OPTIMUM IN
THICKNESS

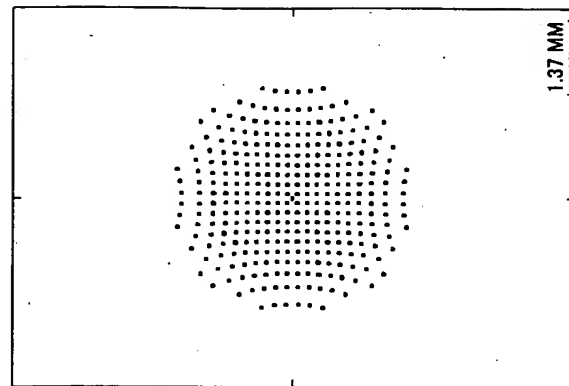


FIG. 9C

CASE WHERE
PROTECTIVE LAYER
IS THICK

LIGHT BEAM INCIDENT ON
SENSOR (A PLANE)

CROSS-SECTIONAL VIEW OF LIGHT
BEAM ON SENSOR (A PLANE)

FIG. 10A

CASE WHERE PROTECTIVE LAYER IS THIN

FOCAL POINT OF INNER PERIPHERAL LIGHT
BEAM IS DISPLACED TO THE RIGHT AND
FOCAL POINT OF OUTER PERIPHERAL LIGHT
BEAM IS DISPLACED TO THE LEFT

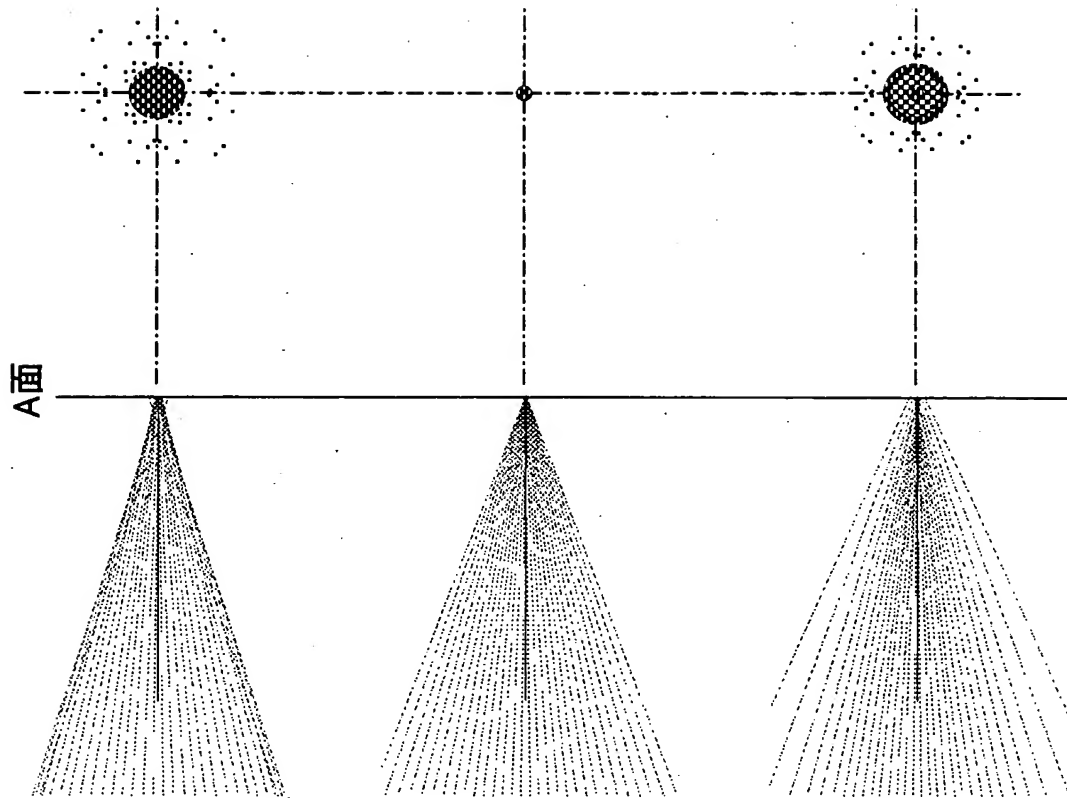


FIG. 10B

CASE WHERE PROTECTIVE LAYER IS
OPTIMUM IN THICKNESS

FOCAL POINT OF INNER PERIPHERAL
LIGHT BEAM AND FOCAL POINT OF OUTER
PERIPHERAL LIGHT BEAM COINCIDE WITH
EACH OTHER

FIG. 10C

CASE WHERE PROTECTIVE LAYER IS THICK

FOCAL POINT OF INNER PERIPHERAL LIGHT
BEAM IS DISPLACED TO THE LEFT AND
FOCAL POINT OF OUTER PERIPHERAL LIGHT
BEAM IS DISPLACED TO THE RIGHT

FIG. 11 DISTRIBUTION OF LIGHT INTENSITY ON SENSOR (A PLANE)

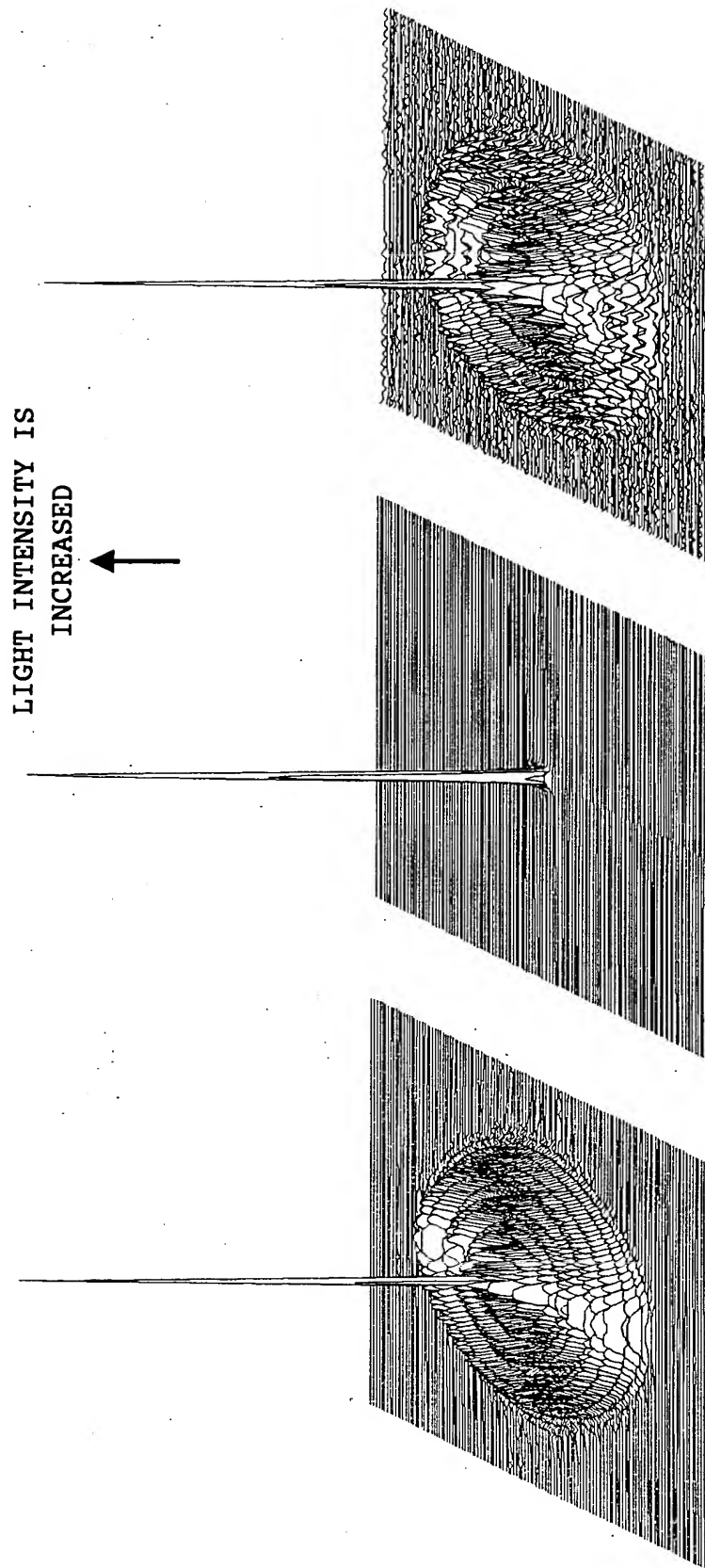


FIG. 11A

CASE WHERE
PROTECTIVE LAYER
IS THIN

FIG. 11B

CASE WHERE PROTECTIVE
LAYER IS OPTIMUM IN
THICKNESS

FIG. 11C

CASE WHERE
PROTECTIVE LAYER
IS THICK

FIG.12 CHANGES IN DETECTION SIGNAL IN ACCORDANCE WITH THICKNESS

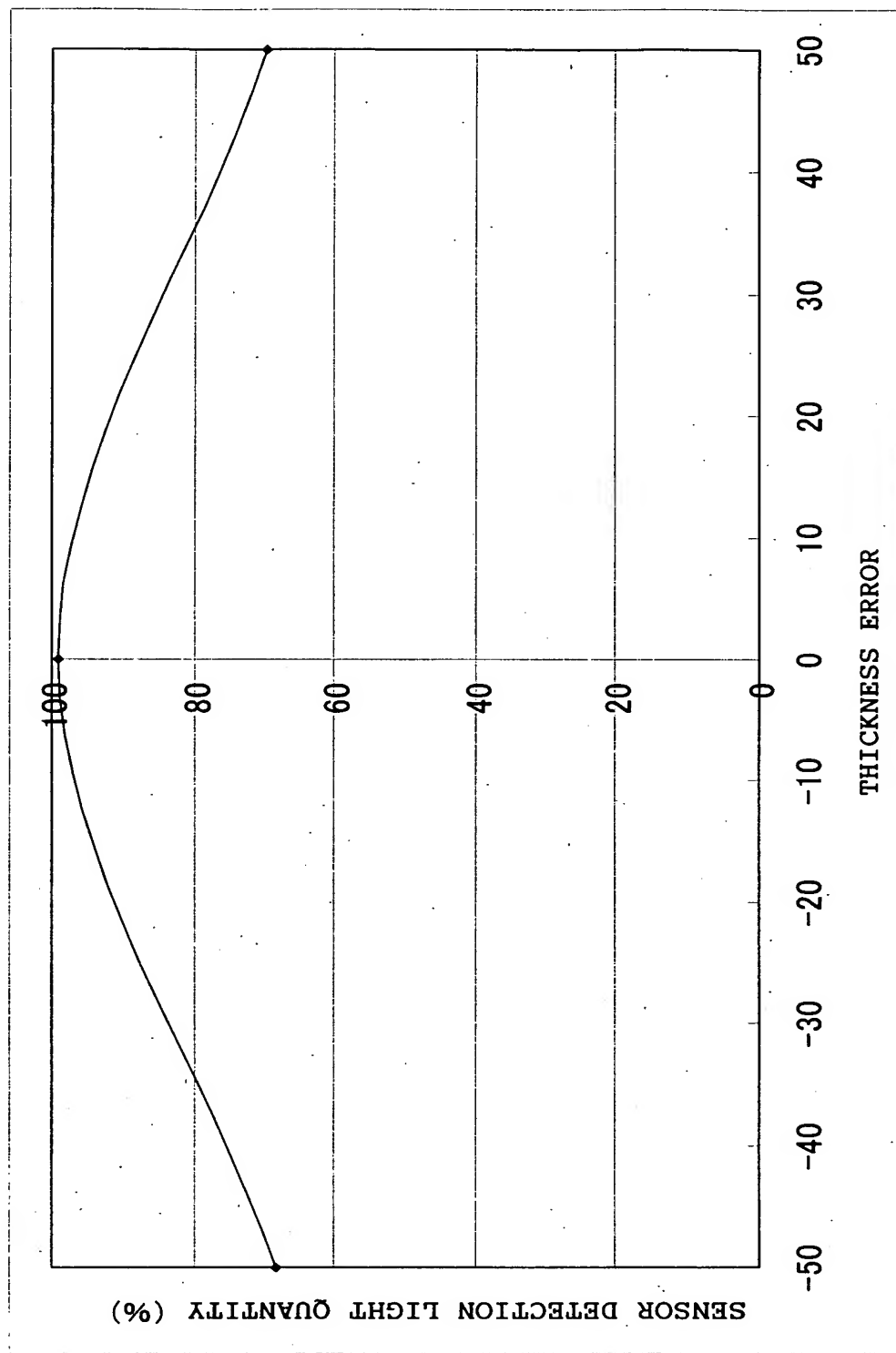


FIG. 13

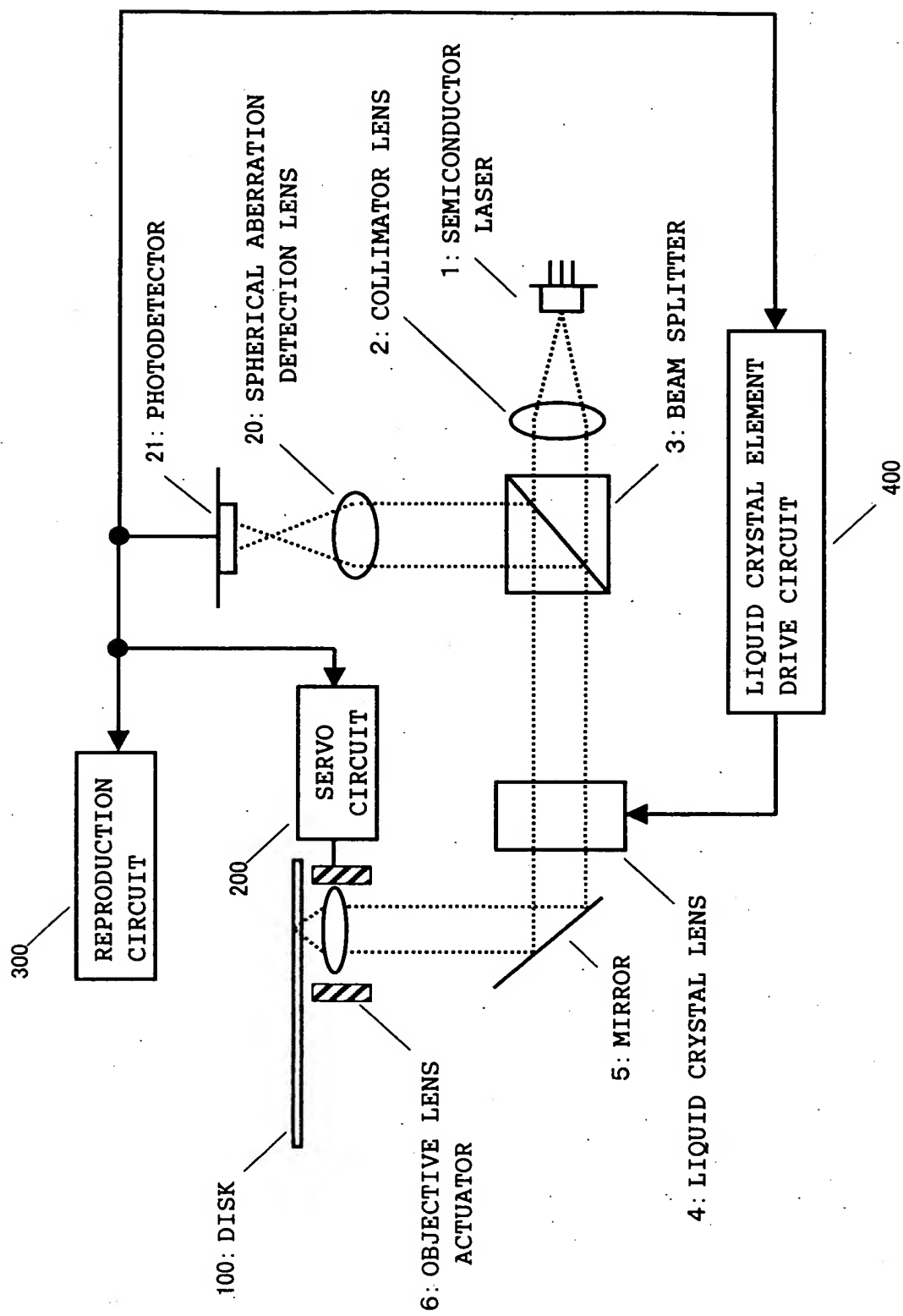


FIG.14

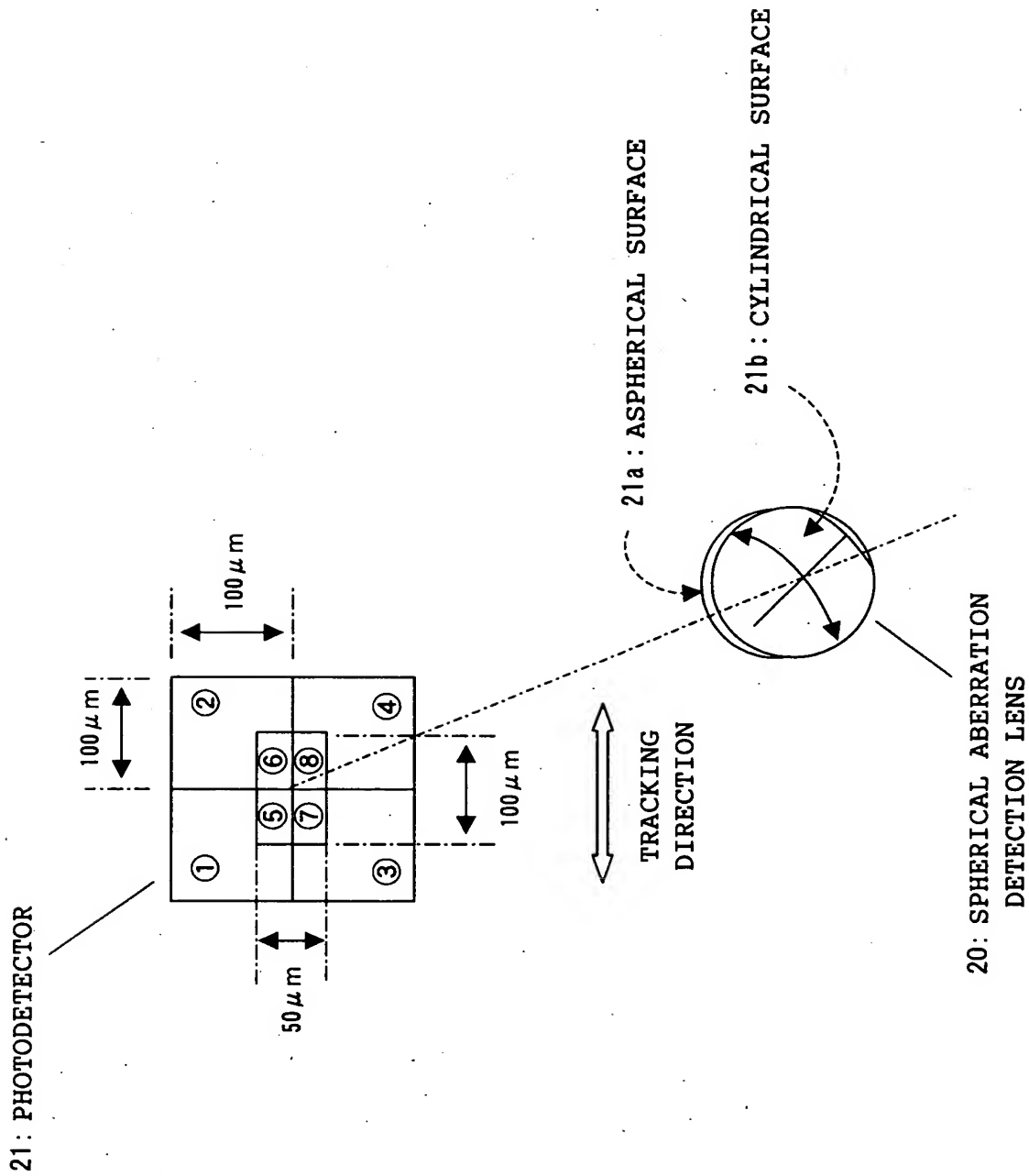


FIG.15

SPHERICAL ABERRATION DETECTION SIGNAL : ⑤+⑥+⑦+⑧

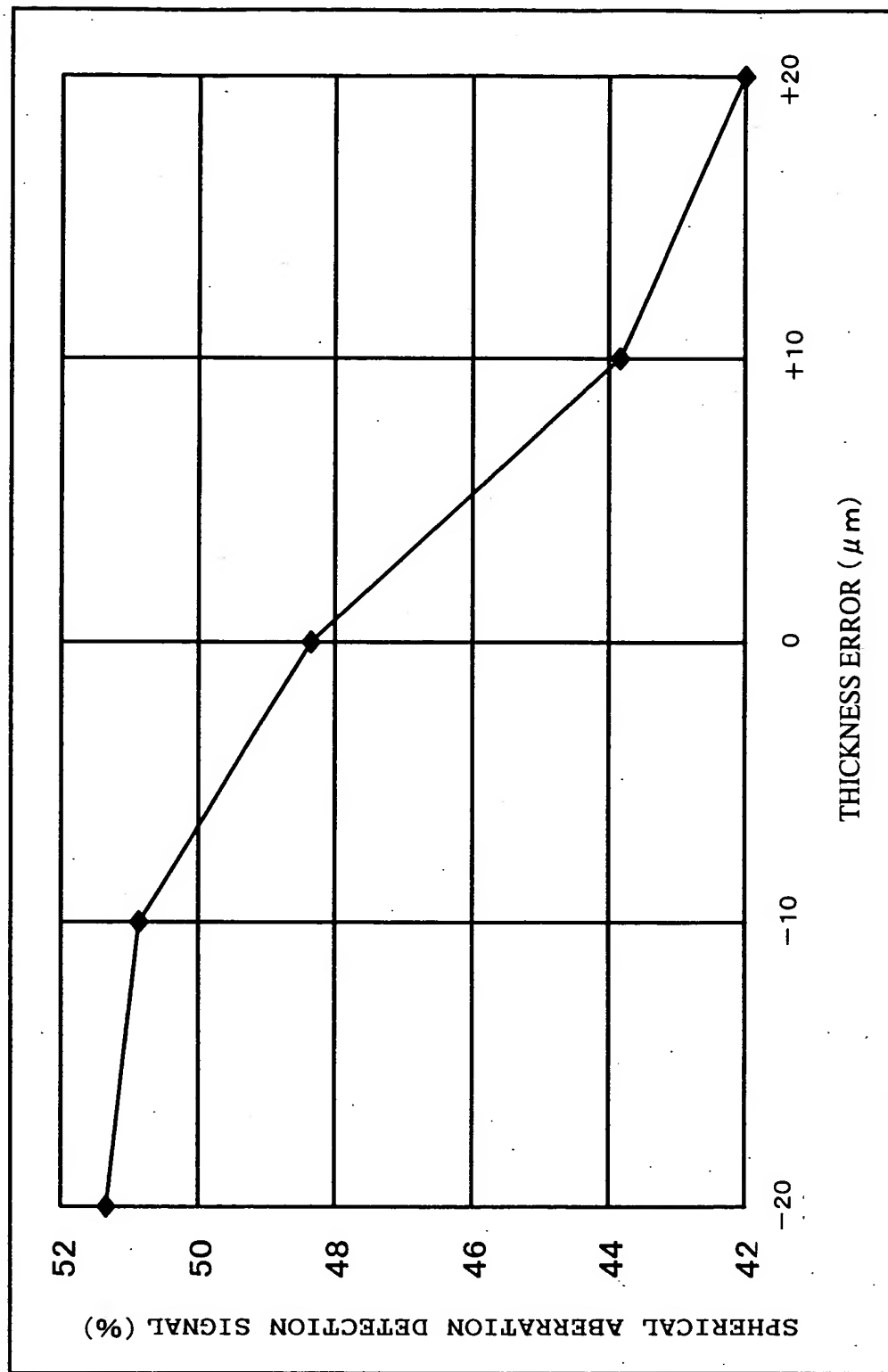


FIG.16

FOCUS ERROR SIGNAL : ①+⑤+④+⑧-- (②+⑥+③+⑦)

